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I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

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010CT03 E841136-5 DD1039  
P01/7700 0.00-0322909.3  
1777

## Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road  
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NP10 8QQ

1. Your reference

P512704GB/DMP/NRW/70523

2. Patent application number

(The Patent Office will fill in this part)

0322909.3

30 SEP 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Cintra Jaggan-Vince  
70 Sudbourne Road  
London  
SW2 5AH

8682213001

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Sling Assembly

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

WITHERS & ROGERS  
Goldings House  
2 Hays Lane  
London  
SE1 2HW

GRAHAM JONES + COMPANY  
77 BEACONSFIELD ROAD  
BLACKHEATH  
LONDON  
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FS1/77

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1776001

2097001

21.09.04

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

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Continuation sheets of this form

Description 5 /

Claim(s) 1 /

Abstract

Drawing (s) 4 +4 Jm

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Wiblow, & Rogers

Signature

Date 30 September 2003

12. Name and daytime telephone number of person to contact in the United Kingdom David M Pratt 020 7663 3500

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P512704GB

### Sling Assembly

The invention relates to a sling for supporting an injured arm of a user, particularly to a sling for use by a person recovering from a stroke or any other condition leading to paralysis of an arm.

A first known sling is made from a triangular bandage which is placed around the arm and tied behind the patient's neck. Other slings are known which comprise a sling portion placed around the patient's arm and is supported by straps worn over the patient's shoulder or around the neck. Often the sling portion is made of foam. Known slings have various disadvantages which make them unsuitable for patients with arm paralysis. Most known slings are difficult to put on without help. This means that a patient is unlikely to be able to take the sling on and off repeatedly throughout the day unless there is someone to help. A patient with arm paralysis often does not need to wear a sling constantly, but may need support the paralysed arm periodically. It would be advantageous to provide a sling which can be easily put on and removed. Also, many slings are uncomfortable to wear. A sling which ties around the neck, or which is worn over one shoulder can cause pain, because it requires the neck or shoulder to support the weight of the injured arm. In the case of a patient with arm paralysis, this problem will be exacerbated, because the arm has reduced muscle tone and will not support itself. This can affect a patient's movement and posture. It would be useful to have a sling which spreads the weight of a supported arm. In addition known slings are often unattractive and not cosmetically pleasing to the patient.

Furthermore, there are various medical disadvantages with known slings. Firstly, many slings, particularly those comprising a foam support portion, create pressure on a small section of the arm or wrist, which can cause damage. A patient with arm paralysis has little or no sensation, and will not feel the pressure created by the sling. This may result in damage to the arm or wrist, because the patient will not realise that the sling should be moved. Secondly, some slings, especially those made from triangular bandages elevate the arm, constricting the elbow joint, which can result in reduced blood flow to

the arm. Thirdly, most known slings are designed to hold the arm in one position. This is undesirable for patients with paralysis as it may result in loss of mobility in the joints, particularly the elbow, and may even lead to strictures. It would be advantageous to have a sling which is adjustable so the position of the arm may be altered, and which does not apply excessive pressure to any part of the arm. It would be beneficial if the sling supported the arm well but allowed some movement.

According to the invention there is provided a sling assembly comprising a support harness arranged to be worn by a user, and a sling portion arranged to support an arm of the user, the sling portion and the support harness being connected by a releasable fastening means wherein, in use, the support harness supports the sling portion to hold the arm of the user in a desired position.

This sling assembly allows the user to go about daily life more easily and in greater comfort. It is cosmetically more appealing than known slings. It is also very easy to put on. Firstly, the harness is put on, and then the sling portion placed on the arm, and then the two connected. The sling assembly may be removed by reversing this procedure. The sling portion may also be disconnected from the harness and removed if the user wishes without removing the whole assembly. Further, the sling assembly supports the arm, but allows some movement if desired, which helps to maintain joint mobility.

The support harness is preferably arranged to be worn, in use, over one shoulder and around the waist of a user. This allows the sling assembly to be worn comfortably, because the load of the supported arm is spread across the back, shoulder and about the waist of the user.

Alternatively, the support harness may be arranged to be worn over both shoulders. This further spreads the load of the supported arm.

The releasable fastening means preferably comprises two parts, a first part attached to the support harness, and a second part attached to the sling portion. The first part is preferably attached to that part of the harness which is worn over a user's shoulder.

Where the harness is worn over both shoulders, two first parts are preferably provided, one for each shoulder. This allows the same harness to be used regardless of which arm is paralysed. In any event, the support harness may be provided with more than one first part so that, in use, the position of the sling portion in relation to the support harness may be altered. Preferably, each fastening means is adjustable to allow further adjustment of the position of the sling portion in use. This allows the position of the arm to be altered to reduce the likelihood of damage to the joint caused by the arm being held in one position, and to ensure that blood flow to the arm is not restricted.

- 10 The support harness is preferably adjustable, so it may be worn by a variety of users.

The sling portion preferably comprises a support portion made up of two substantially identical halves on either side of a fold line. The halves are preferably substantially trapezoidal in shape. In use, the arm generally rests in the fold line, and the halves are positioned on either sides of the arm. The halves are preferably joined to each other at the sides opposite to the fold line by the second part of the fastening means. The halves may be attached directly to the second part of the fastening means, or preferably, each half is attached to the fastening means by a strap. The straps are preferably widened at the point of their attachment to the halves. Alternatively, each half may have a joining portion to join the strap to that half, the joining portion being narrower than that half, but wider than the strap. This helps to spread the load of the arm across the whole of the support portion, along the length of the fold line, and helps to prevent the strap pulling on the middle of the fold line.

- 25 The sling assembly is preferably provided with an exercise ball attached to the support harness or, preferably, to the sling portion. This may be used by the user to exercise the paralysed arm.

In one embodiment, the sling assembly is made of waterproof material. This allows the assembly to be worn when washing, showering or bathing.

In another embodiment, the support harness is in the form of a jacket, with one or more sleeves. Such an embodiment can provide even more support and protection for the paralysed arm.

- 5 The invention will now be described in detail, by way of example only, with reference to the drawings, in which:

Figure 1 shows a first embodiment of the sling assembly worn by a user;

- 10 Figure 2 shows the sling assembly of Figure 1, unassembled;  
Figure 2A shows a plan view of the support harness;  
Figure 2B shows an under-plan view of the support harness;  
Figure 2C shows the support portion.

- 15 Figure 3 shows an alternative embodiment of the sling assembly, worn by the user; and

Figure 4 shows the assembly of Figure 3, unassembled.

- Referring to the drawings, Figure 1 and 2, show a sling assembly 5 comprising a  
20 support harness 8 and a sling portion 10. The support harness 8 is arranged to be worn over the user's shoulder and around the user's waist, as shown in Figure 1. When unassembled, as shown in Figure 2, the harness is elongate in length, and includes a widened in the portion 12 to be worn over the shoulder. The harness 8 is assembled by placing one end 14 at one side of the user's body at waist level (as indicated by the  
25 arrow A in Figure 1) and passing the harness over the user's opposite shoulder (as indicated by the arrow B in Figure 1). The harness 8 is then passed across the user's back so that the middle 16 of the harness meets the first end 14 (at A). The first end 14 and the middle 16 are provided with complementary fasteners 18 such as velcro strips, press-studs or the like, so they may be joined together. The remainder of the harness 8  
30 is passed around the user's waist, so that a second end 20 of the harness meets the middle 16 at the side of the user's waist (A). The middle 16 and the second end 20 of the harness are provided with further fasteners 22 so they may be joined together.

The harness 8 is provided a first part 24A of a fastening means 24 to allow attachment of the sling portion 10 which is provided with a second part 24B of the fastening means.

5

The sling portion 10 comprises a support portion 26 for supporting the arm. The support portion 26 is padded to cushion the arm, comprises two halves 28 and 30 on either side of a fold line 32.

- 10 In use the arm rests in the fold line 32. The halves 28, 30 are generally trapezoidal in shape. Each half 28, 30 has a joining portion 34, 36 on the edge opposite to the fold line 32. Each joining portion 34, 36 is attached to a strap 38, 40 which is attached to the second part 24B of the fastening means. In use, the first and second parts 24A and 24B of the fastening means are joined to attach the sling portion 10 to the support
- 15 harness 8.

In an alternative embodiment (not shown), a further strap is added to the harness 8, to be worn over the user's other shoulder.

- 20 In a second embodiment the support harness is in the form of a jacket 42, as shown in Figures 3 and 4. The jacket 42 has a body portion 44 which comprises a back portion 46 and the front portion 48. The back and front portions 46, 48 are provided with fasteners at one side 50 of the user's waist to allow them to be joined. A strap 52 is provided which is attached to the back portion 46, and passes over the user's shoulder
- 25 to meet the front portion 48 where further fasteners 54 are provided. The jacket 42 also has a sleeve 56 which covers the paralysed arm. The sleeve 56 is provided with a slit 58, to allow access to the arm. This harness is used in conjunction with the sling portion 10 of the previous embodiment. The harness is provided with the first part of the fastening means 24A on the strap 52.

30

**Claims**

1. A sling assembly comprising a support harness arranged to be worn by a user,  
and a sling portion arranged to support an arm of a user, the sling portion and the  
5 support harness being connected by a releasable fastening means, whereby, in use, the  
support harness can support the sling portion to hold an arm of a user in a desired  
position.
2. A sling assembly according to claim 1, wherein, in use, the support harness is  
10 configured to be worn around the waist and over a shoulder of a user.
3. A sling assembly according to claim 1, wherein, in use, the support harness is  
configured to be worn over both shoulders of a user.
- 15 4. A sling assembly according to any preceding claim, wherein the support  
harness is adjustable, so that it may fit users of varying sizes.
5. A sling assembly according to any preceding claim, wherein at least two  
releasable fastening means are provided on the harness to allow the position of the  
20 sling portion to be altered.
6. A sling assembly according to any preceding claim, wherein the harness is in  
the form of a jacket.
- 25 7. A sling assembly according to any preceding claim, further comprising an  
exercise ball attached to either the sling portion or the support harness to encourage a  
user to exercise an arm supported by the sling assembly.

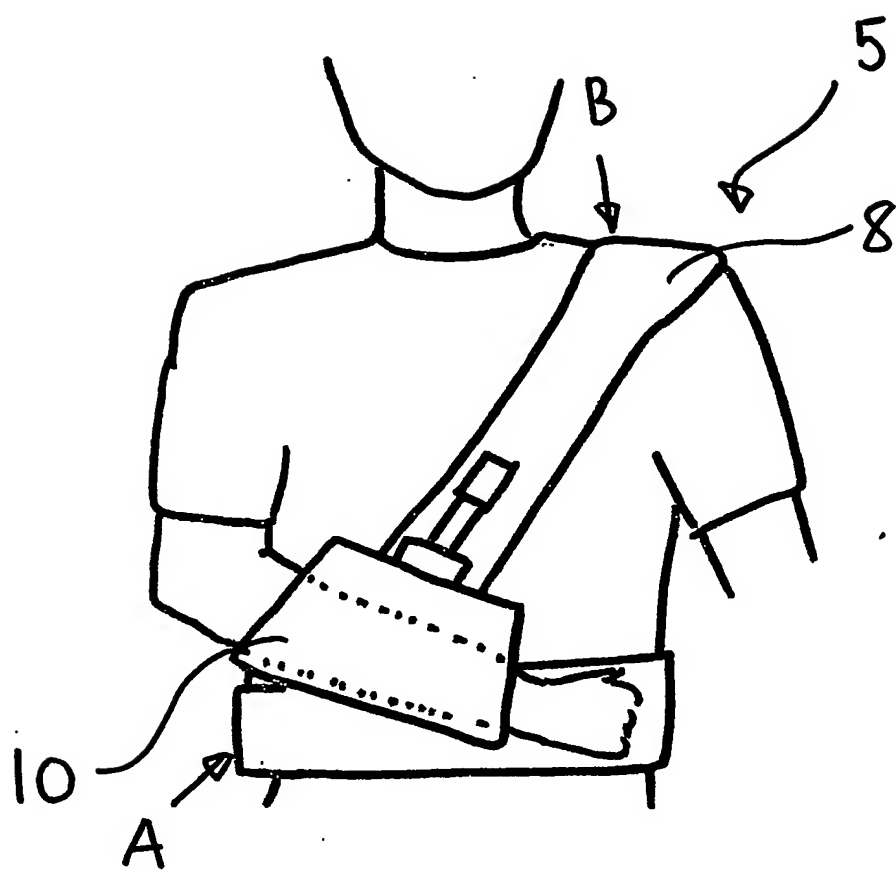


FIG 1

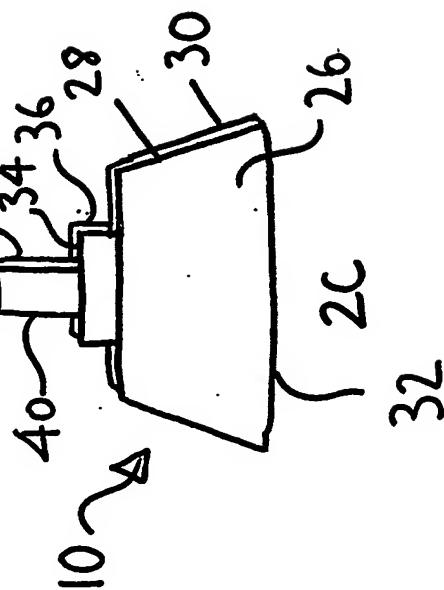
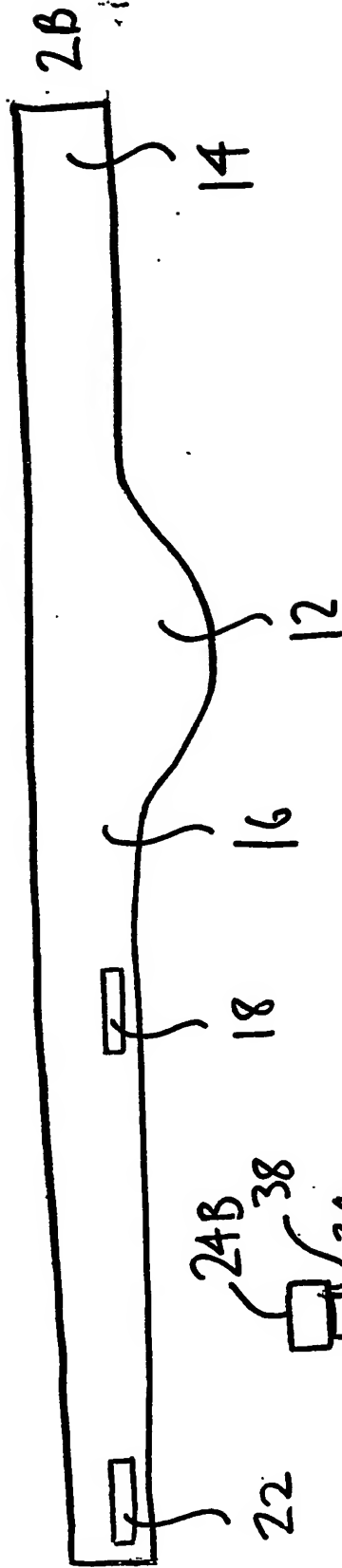
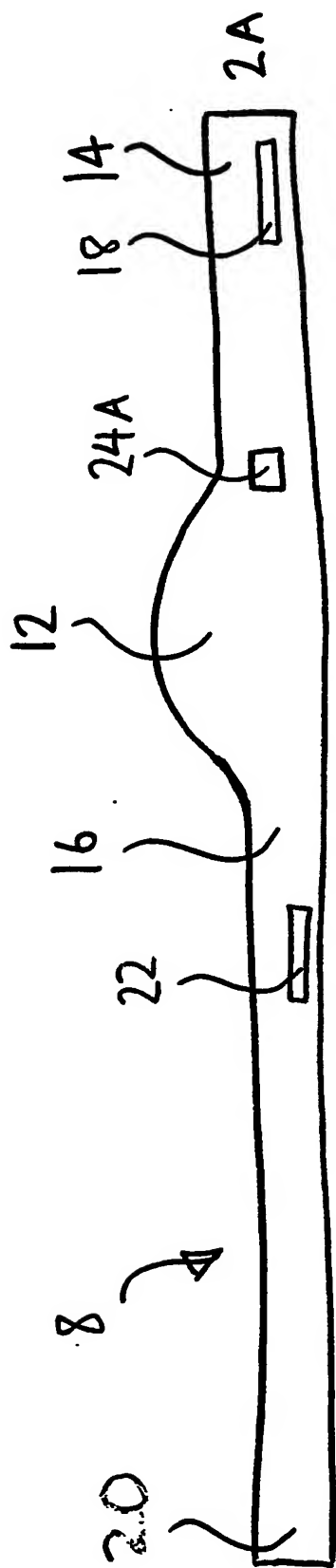


FIG 2

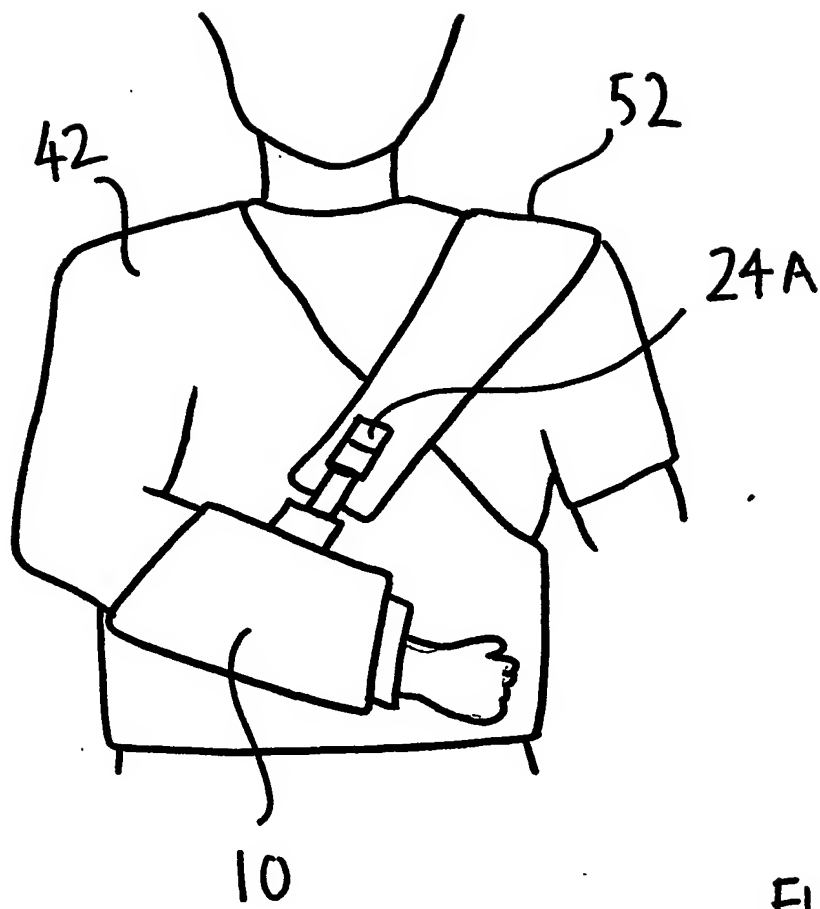


FIG 3

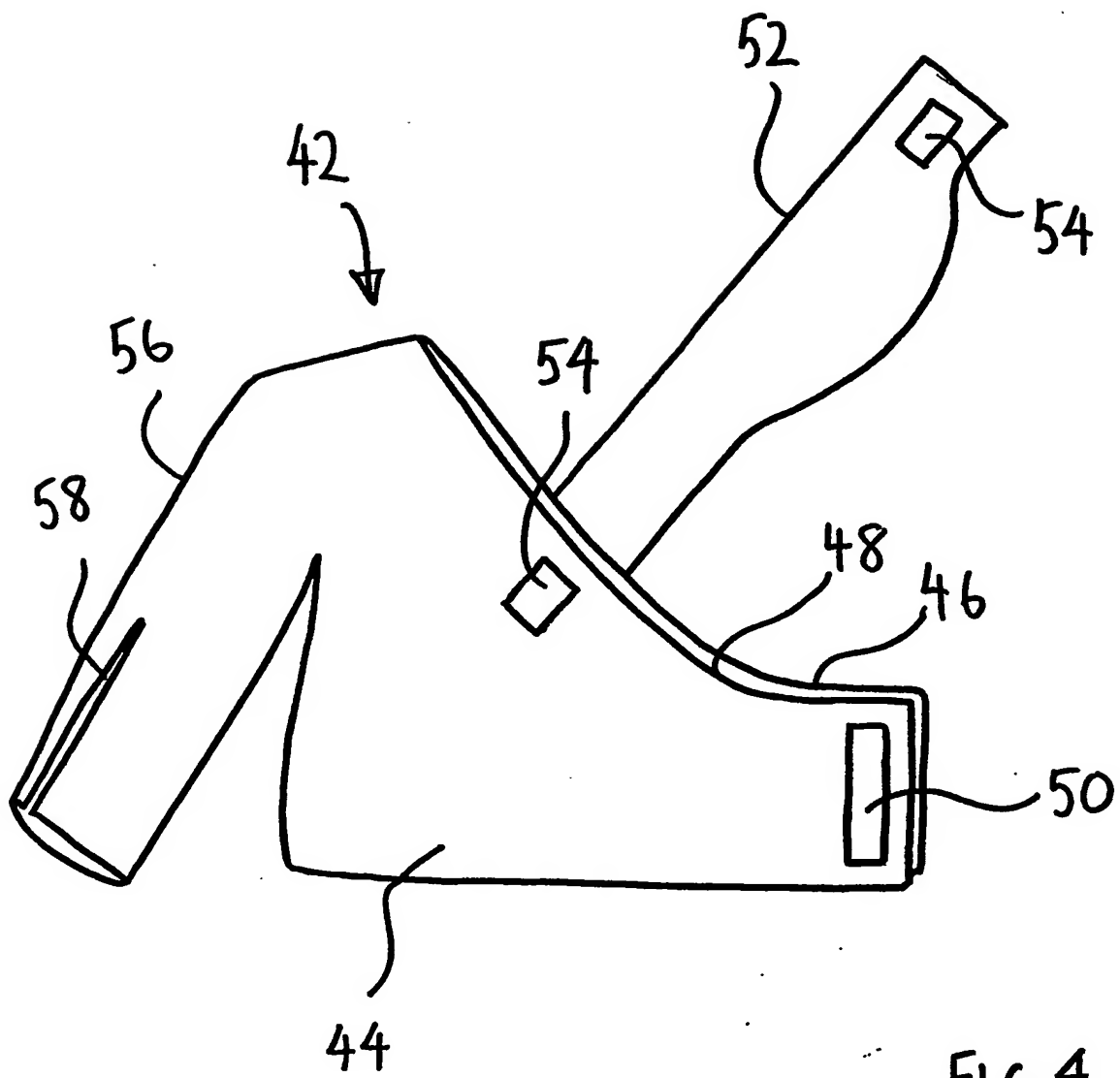


FIG 4

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